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Customer-Centric Technology: A Science Mapping of Marketing Transformation

1st Rizka Zulfikar^a, 2nd Nanang Suryadi^b, 3rd Yudhita Valen Prasarry^c

^aDepartment of Management, Economic Faculty, Islamic University of Kalimantan
MAB, Banjarmasin, Indonesia

^bDepartment of Management, Faculty of Economics and Business, Brawijaya
University, Malang, Indonesia

^cDepartment of Management, Binus Online Learning, Bina Nusantara University,
Jakarta, Indonesia

Abstract

This research aimed to analyze the impact of technology on marketing practices, from the adoption stage to the creation of customer experience, through a bibliometric approach. Using 133 articles published between 2000 and 2024 obtained from Scopus.com database, the study compiled a comprehensive literature analysis to identify key trends, dominant research themes, and gaps in the literature. The article selection process was carried out using the PRISMA method with keywords such as "technology adoption," "digital marketing," and "customer experience,". The bibliometric process was carried out using bibliometric analysis tools such as Biblioshiny-R. The results showed that technologies such as artificial intelligence (AI), big data analytics, and the Internet of Things (IoT) have a significant role in improving personalization and marketing efficiency, while creating a more immersive and satisfying customer experience. The study identified patterns of author networks, leading journals, as well as research trends that focus on the integration of technology in customer experience design. These findings make a theoretical contribution by strengthening the understanding of the relationship between technology adoption and customer experience, as well as practical implications for companies in developing technology-based marketing strategies.

Keyword: marketing, technology adoption, customer experience, artificial technology, internet of things.

1. INTRODUCTION

Customer-centric technology in marketing has emerged as a critical focus in recent years, driven by the increasing consumer demand for personalized experiences and the proliferation of digital tools that facilitate deeper engagement between brands and their customers. This concept highlights a transformative shift within marketing paradigms, moving away from traditional product-centric approaches to strategies that prioritize customer needs, preferences, and behaviors (Alhakimi & Mahmoud, 2020). Various studies have illustrated that adopting a customer-centric viewpoint empowers organizations to create

value collaboratively with their customers, yielding heightened loyalty and satisfaction (Bamfo & Kraa, 2019; Colleoni et al., 2021).

At its core, customer-centric technology embodies the integration of digital solutions – including big data analytics, artificial intelligence (AI), and advanced customer relationship management (CRM) systems – that allow businesses to collect, analyze, and utilize customer data to tailor offerings and marketing strategies. Advanced analytics and machine learning algorithms enable businesses to predict trends, preferences, and potential pain points based on customer interactions across various platforms (Alibabaei et al., 2022; Mohamed, 2023; Shrestha et al., 2021). This capacity for real-time insights empowers marketers to adapt their strategies dynamically, enhancing their engagement efforts and promoting a more personalized consumer experience (Udeh et al., 2024).

Customer-centric technology aligns closely with principles of market orientation, wherein companies actively seek to understand and address the desires of their customers. As articulated by Bamfo & Kraa (2019) organizations that emphasize customer-centricity are better positioned to identify emerging opportunities and align operational efficiencies with marketing strategies that cater to evolving customer expectations. This alignment results in a holistic approach where feedback loops establish a continuous dialogue, driving innovative improvements based on genuine consumer insights.

Nevertheless, significant gaps within academic literature persist regarding the systematic study of customer-centric technology and its broader implications for marketing strategies. Previous research has frequently focused on isolated digital tools or aspects of customer engagement, suggesting a need for a more integrative approach that outlines how various technologies interconnect to foster customer-centric ecosystems (Moro et al., 2023; Tuominen et al., 2023).

The urgency of researching customer-centric technology in marketing is underscored by its implications for business sustainability and competitive advantage. As companies strive to meet rising consumer expectations, deploying technologies that enhance customer interactions becomes paramount. This urgency is evident in the broader context of digital transformation, where firms that fail to adapt risk obsolescence in demanding market conditions (Hussain et al., 2023). Hence, organizations must focus on cultivating digital marketing capabilities to remain competitive and responsive to customer needs across diverse sectors.

Identifying gaps in existing literature further guides this research. While numerous studies have examined aspects of digital transformation, relatively few have synthesized

comprehensive mappings of scientific research related to customer-centric technology in marketing. Specifically, the lack of cohesive frameworks explaining the interconnectedness of digital marketing tools, consumer behavior analytics, and organizational capabilities poses significant challenges. Masrianto et al., (2022) emphasized that understanding the digital marketing landscape from the perspective of corporate actors is critical yet often overlooked. This gap presents a critical opportunity to advance the discourse around technology's implications for customer engagement in marketing.

The specific purposes of this study were twofold: first, to provide structured science mapping of the relationship between customer-centric technology and marketing transformation, identifying key trends and insights from existing literature. Second, to offer actionable recommendations for practitioners seeking to effectively leverage customer-focused technologies in their marketing strategies. By addressing these objectives, the research aims to bridge the gap between theory and practice, enabling firms to navigate the complexities of a continually evolving digital marketplace while prioritizing customer fulfillment and engagement.

2. METHOD

The bibliometric method was employed in this study to analyze the development of literature related to the topic of technology's influence on marketing practices. A total of 133 articles were selected as the research sample, with data sourced from the Scopus.com database. The data selection process was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method, which is designed to ensure transparency and accuracy in selecting relevant articles.

The bibliometric approach enables researchers to identify trends, relationships between concepts, and networks of influential authors and journals within a particular topic (Donthu, Kumar, Mukherjee, et al., 2021). By utilizing visualization tools such as VOSviewer or Biblioshiny, this study reveals patterns of inter-article relationships, such as the impact of technology on consumer behavior in digital marketing.

The PRISMA process ensures that the selected articles meet high academic standards and are relevant to the research focus. According to Page et al. (2021), PRISMA helps construct a systematic framework for managing literature data through the stages of identification, screening, eligibility assessment, and final inclusion of articles for analysis.

The selection process began with identifying articles based on specific keywords that reflect the research focus. This was followed by screening based on predetermined inclusion

and exclusion criteria. The inclusion criteria comprised articles written in English, published between 2001 and 2024, containing relevant keywords such as "technology adoption," "marketing," and "customer experience," and published in indexed journals. Meanwhile, the exclusion criteria included book reviews, editorials, or articles that did not provide full-text access.

(TITLE-ABS-KEY (marketing) AND TITLE-ABS-KEY (technology AND adoption) AND TITLE-ABS-KEY (customer AND experience)) AND PUBYEAR > 2000 AND PUBYEAR < 2025

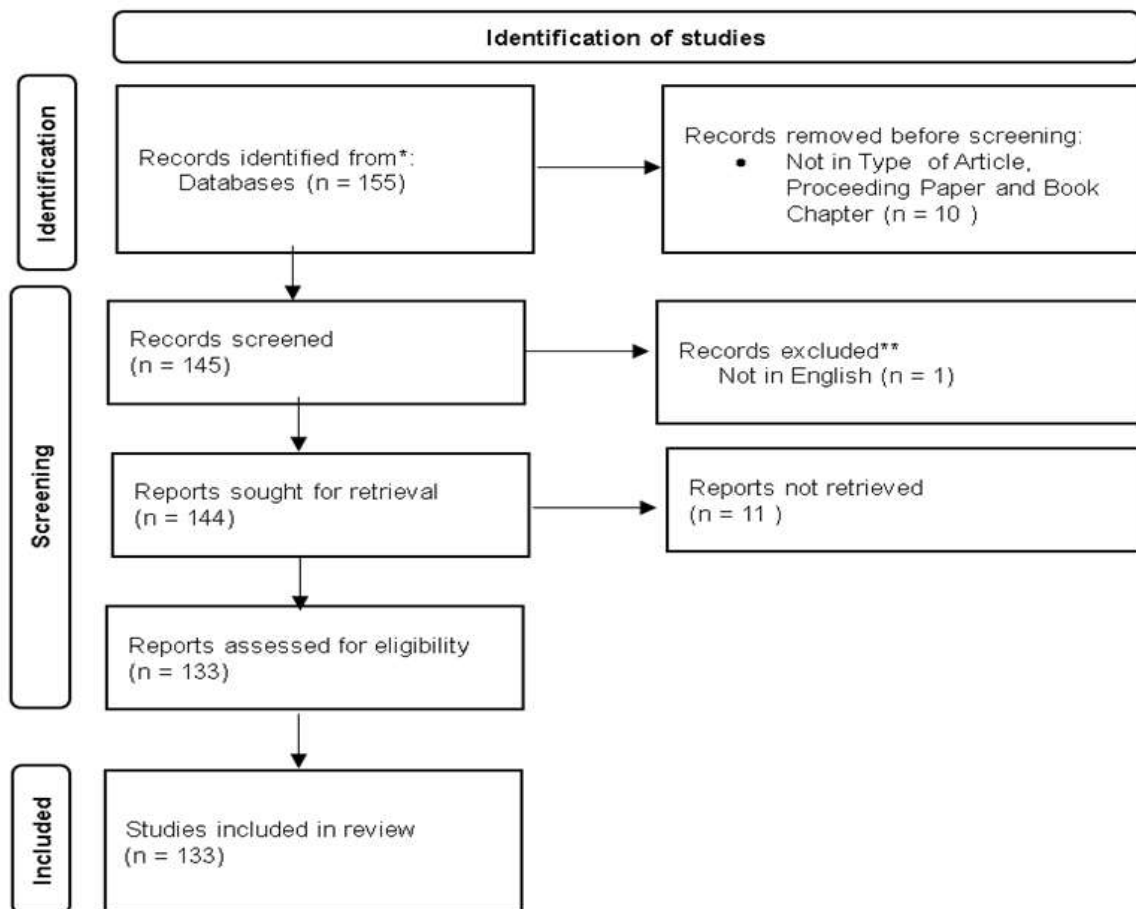


Figure 1. PRISMA Process
Source : Prepare by Author

3. RESULT AND DISCUSSION

3.1. Performance Analysis

a) Descriptive

Figure 2 provides an overview of the bibliometric dataset that underpins the study on customer-centric technology in marketing transformation. It offers descriptive metrics, such as the number of documents analyzed, sources, author contributions, and keyword

occurrences. This foundational view reveals the scope and credibility of the literature used, highlighting the growing relevance of the topic. The distribution of publications across various journals and conference proceedings suggests a multidisciplinary interest, while the balance between unique and co-authored works points to a healthy collaboration pattern in the field. Moreover, the inclusion of both author keywords and Keywords Plus demonstrates an interplay between researcher-intended themes and algorithmically derived insights, reflecting a complex yet coherent thematic orientation. The temporal coverage captured in this figure further illustrates that the topic has gained momentum in recent years, reinforcing the timeliness and strategic value of this research. Overall, Figure 1 sets the stage for a deeper exploration of how customer-focused technological transformation is being documented, theorized, and expanded within the marketing literature.



Figure 2. Overview Research Data
Source : Processed by Author, 2025

b) Trend Analysis

Figure 3 presents a longitudinal trend analysis that tracks the number of publications over time related to customer-centric technology in marketing. The observed upward trajectory signifies a sustained and increasing scholarly interest in the topic. This trend likely corresponds with the rapid evolution of digital technologies and their adoption within marketing ecosystems. As businesses strive to personalize customer experiences and automate engagement through AI, data analytics, and CRM platforms, academic inquiry into these transformations has accelerated. The growth curve may also reflect responses to global challenges, such as the COVID-19 pandemic, which pushed organizations to digitize customer interaction models.

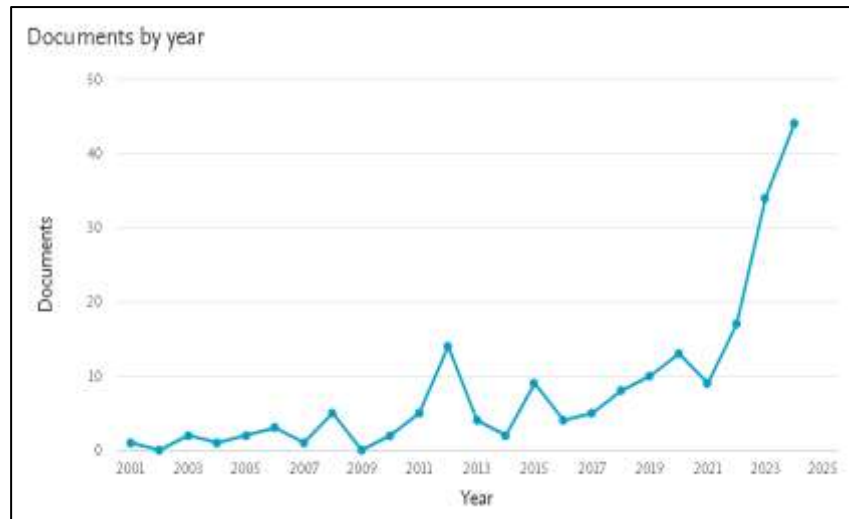


Figure 3. Trend Analysis

Source : Processed by Author, 2025

The timeline suggests an initial exploratory phase followed by a more mature phase of applied research, focusing on the implementation, evaluation, and implications of technological innovations. This trend analysis substantiates the dynamism of the field and underscores the strategic imperative for marketers and researchers to continuously align with evolving customer-centric technologies.

3.2. Science Mapping

a) Co-occurrence Network

Figure 4 presents the co-occurrence network of author keywords, illustrating the intellectual landscape of customer-centric marketing technologies. The network reveals how frequently specific keywords appear together in the literature, highlighting clusters of interconnected themes. Central nodes such as "customer experience," "digital transformation," and "technology adoption" dominate the network, acting as thematic anchors (Kumar et al., 2023). Their interlinkages with peripheral terms like "AI," "personalization," and "big data" illustrate the expansion of these foundational themes into broader technological applications (Kumo et al., 2023). This visualization uncovers thematic groupings that reflect interdisciplinary intersections among marketing, information systems, and consumer psychology (Donthu et al., 2021). Larger, more connected nodes signify topics of greater relevance and research activity, while isolated clusters point to emerging or niche areas (Li, 2020). This figure thus underscores the complex and multifaceted discourse surrounding technology-driven marketing transformation, highlighting potential avenues for future research, especially in underexplored yet thematically relevant areas.

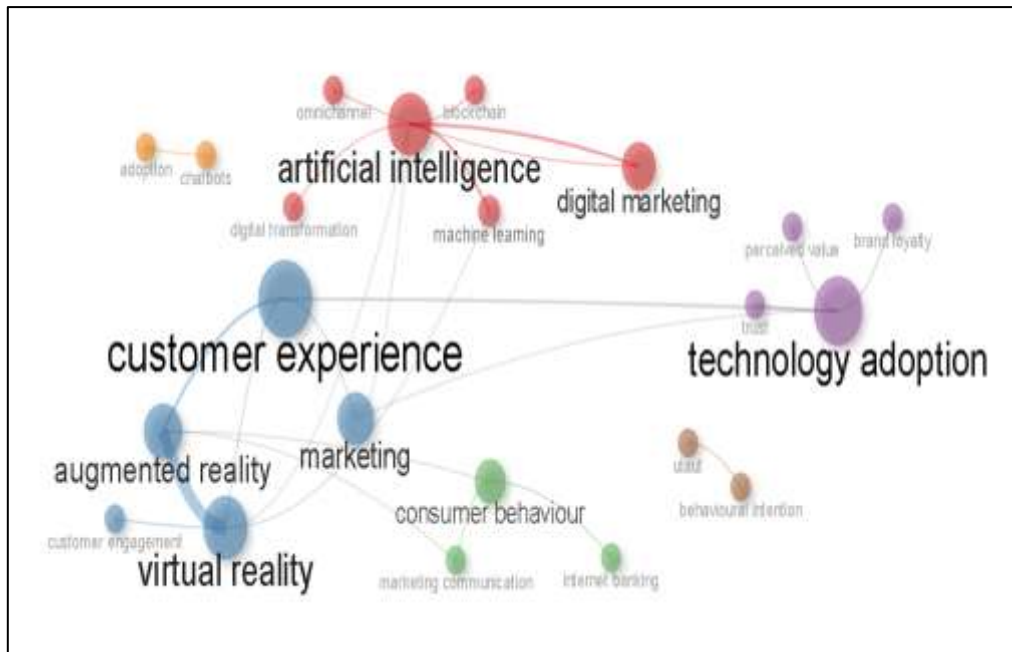


Figure 4. Co-occurrence Network
Source : Processed by Author, 2025

b) Thematic Map

Figure 5 provides a thematic map that classifies research themes according to their centrality (relevance) and density (development). The four quadrants—motor themes, basic themes, niche themes, and emerging/declining themes—form a strategic framework to evaluate the maturity and significance of various research topics (Kumar et al., 2023). Motor themes like "digital transformation" and "customer experience" are well-developed and central to the field, representing the core of scholarly discourse (Shrestha et al., 2023; Yulianti et al., 2023). Basic themes, such as "CRM" and "consumer behavior," while foundational, require further development to maintain their relevance in a rapidly evolving landscape. Niche themes, potentially including "augmented reality" or "blockchain," are well-developed but less connected to the mainstream, signifying areas of specialization and innovation (Dolmova, 2022).

Emerging or declining themes, residing in the lower-left quadrant, indicate either diminishing interest or new areas yet to gain traction (Ghura et al., 2022). This thematic mapping enables scholars to identify both saturated and underexplored research areas, guiding future academic inquiry and practical innovations in customer-centric marketing technologies (Shrestha et al., 2021).

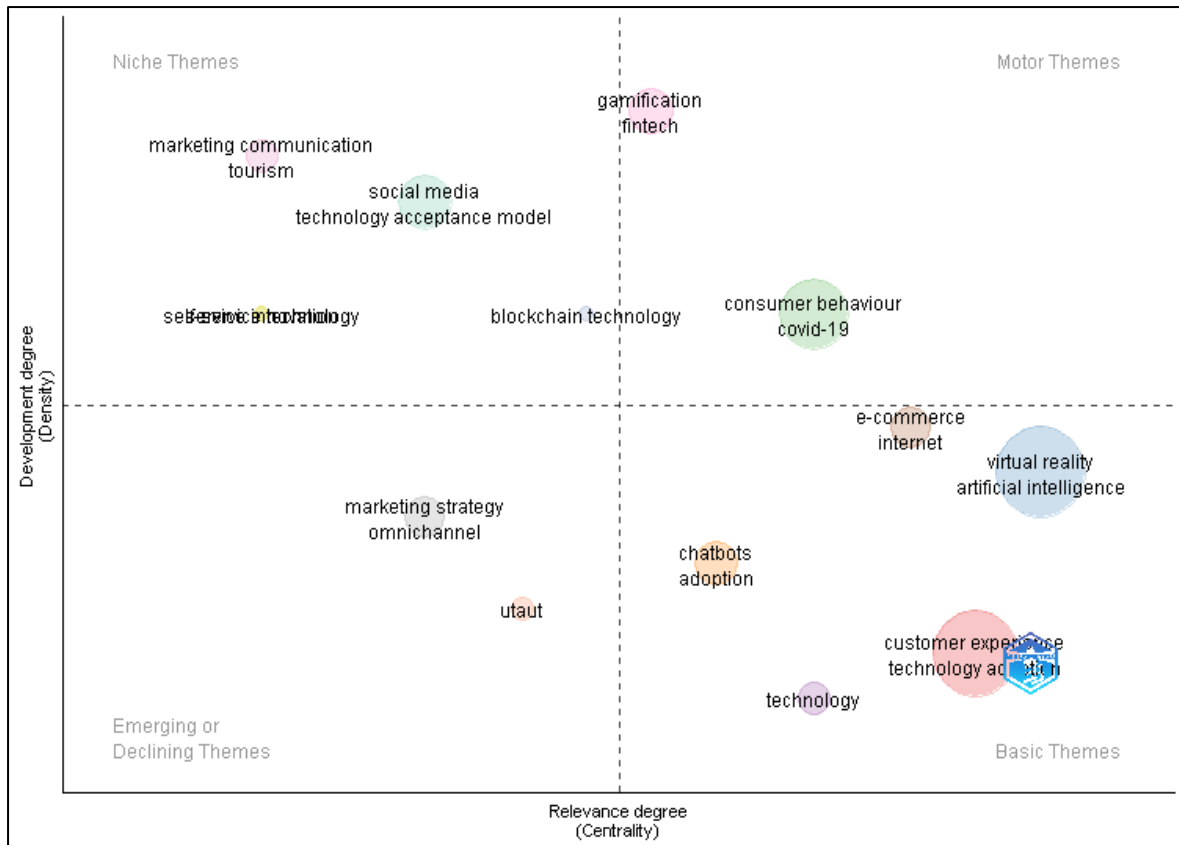


Figure 5. Thematic Map

Source : Processed by Author, 2025

c) Thematic Evolution

Figure 6 depicts the thematic evolution within the customer-centric marketing field across distinct time periods, providing a longitudinal view of how key research themes have emerged, transformed, or diminished. Early themes such as "information systems" and "e-commerce" evolve into more sophisticated and customer-oriented concepts like "personalization," "AI in marketing," and "customer journey analytics" (Baybars et al., 2023; Vidhya , 2023). This evolution reflects a shift from focusing on technological infrastructure to emphasizing strategic customer engagement (Shrestha et al., 2021).

Thematic continuity lines exemplify how concepts have merged, diverged, or evolved over time, indicating intellectual maturity and integration of new technologies in marketing practices. The emergence of themes like "omnichannel marketing," "customer empowerment," and "digital trust" in later periods signifies an increased focus on holistic and ethical considerations. Overall, this figure highlights the dynamic nature of the field, demonstrating its adaptability to technological advancements and changing consumer expectations. It forms a strategic roadmap for researchers to trace the intellectual trajectory of customer-centric technology in marketing and anticipate future scholarly directions.

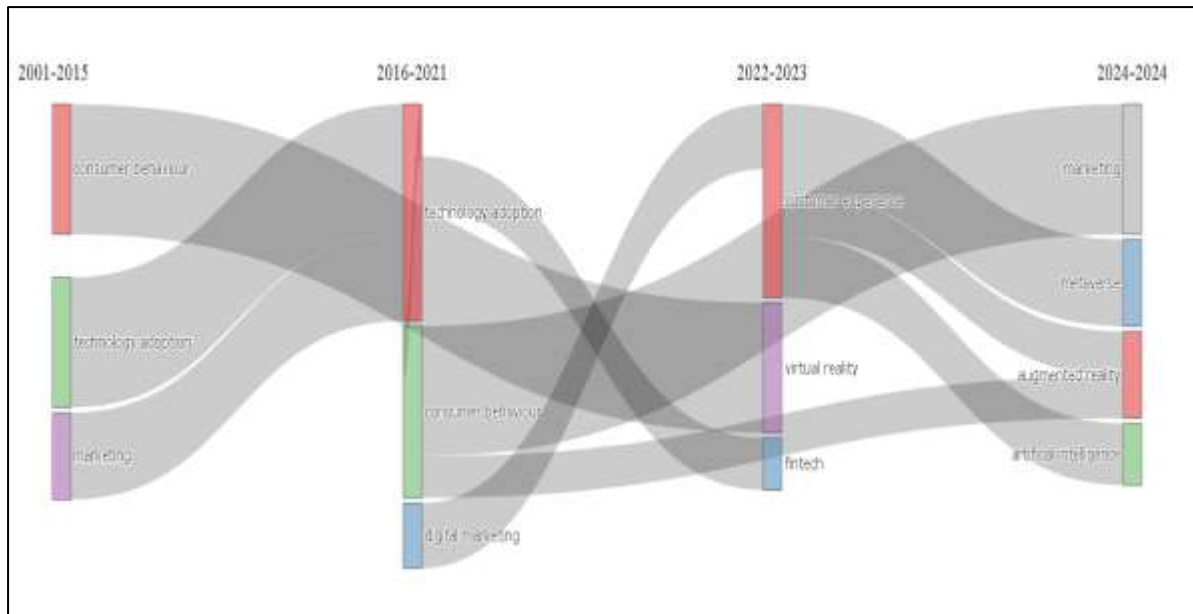


Figure 6. Thematic Evolution
Source : Processed by Author, 2025

4. CONCLUSION AND IMPLICATIONS

The findings underscore the critical role of technologies such as artificial intelligence, big data analytics, and the Internet of Things in enhancing personalization, improving marketing efficiency, and fostering immersive customer experiences. The research illustrated a thematic evolution from foundational topics like e-commerce and information systems to more strategic constructs such as digital trust, omnichannel marketing, and co-creation. The study not only maps the intellectual structure of the field but also identifies emerging areas that warrant deeper exploration. These insights highlighted the importance of integrating customer-centric technologies to maintain competitive advantage and respond effectively to shifting consumer expectations in the digital age.

This study enriches the theoretical discourse on digital transformation and customer engagement by offering an integrative view of how various technologies coalesce to reshape marketing strategies. It strengthens the conceptual link between technology adoption and market orientation, particularly emphasizing customer experience and co-creation. The thematic mapping and evolution analyses advance the theoretical understanding of customer-centric ecosystems and underscore the shift from transactional marketing to relationship-oriented approaches.

Furthermore, the study contributes to bibliometric scholarship by demonstrating how science mapping can systematically uncover the development and trajectory of a research domain. It provides a structured framework for future studies to investigate underexplored

intersections such as ethical considerations, trust, and digital empowerment in customer-centric marketing.

From a managerial perspective, this study offers actionable insights for marketing professionals and business leaders aiming to enhance customer relationships through technology. Companies are advised to invest in data-driven technologies that facilitate personalization and real-time customer analytics, enabling them to anticipate needs and deliver tailored experiences. Small and medium enterprises (SMEs), in particular, can leverage these findings to strategically adopt digital tools that align with their marketing capabilities and organizational readiness.

Additionally, the identification of motor and emerging themes provides a roadmap for practitioners to prioritize technologies that are both impactful and underutilized. Emphasizing customer empowerment, ethical data use, and integrated omnichannel experiences can help firms build trust and foster deeper brand loyalty. Ultimately, aligning digital investments with customer-centric values will not only improve marketing performance but also ensure long-term business sustainability in an increasingly competitive digital marketplace.

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